

# Can Non-Adhesive Short Stretch Bandages Change a Life?

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## ABSTRACT

*Venous stasis ulcers are common in patients who have a history of leg swelling, varicose veins, or a history of blood clots in either the superficial or the deep veins of their legs. The treatment is long and hard but the main aim of it is to create such an environment that allows skin to grow over an ulcer. Chronic wounds are a growing social, economical and health issue throughout the world. The purpose of this retrospective study was to establish detailed characterization of how effective a compression is in reducing the time of wound healing. A total of 176 patients with leg ulcers were included in our three years study. The measurements were taken based on the anamnesis, presenting clinical symptoms, digital photography at each dressing foam change, and, finally, wounds. During a 3 years period (2011–2013) a total of 176 patients (61 male and 115 female, 34.66% and 65.34% respectively) with different types of leg ulcers were treated at our Hospital. The average age is 68,94 years (male 68 years, female 70 years). We measured how long the patient had the wound before starting the treatment, and also how long the treatment lasted. This led us to the conclusion that compression therapy shortened the time of treatment by two thirds, compared to the usual therapy. Compression systems improve the healing of venous leg ulcers and should be used routinely regarding venous ulcers.*

**Key words:** venous ulcers, varicose veins, compression therapy

## Introduction

Chronic wounds are a growing social, economical and health issue throughout the world. The biggest percentage of these wounds occur because of venous insufficiency in distal lower leg region where venous pressure is the highest. A serious problem are multiple ulcers on both legs which do not react to any conventional therapy. In developed countries, where good databases can be found, the occurrence of chronic venous ulcers is around 0.2% in age group 30–39, and around 2.4% in age group 70–79<sup>1–2</sup>.

The treatment of venous ulcers sometimes lasts for years, making it a big economic problem both for the health system and the patient himself.

Lots of scientific papers were released covering this topic and concerning different treatment strategies and cost reduction, but forgetting the essence of treatment itself. We, on the other hand, will emphasize the pathophysiology of wound and constructing basic diagnostical diagram which should be constructed during the first meeting with the patient. About ten years ago TIME concept was developed. Falanga was the first one who described it, and

later it was developed by European Wound Management Association<sup>3</sup>. Lately, we have been using short elastic bandages that have an extensibility less than 100%. When these are put one over another, we get multiple layered system called compression system. The advantage of this system lies in passive compression, which is a lot lower in standstill compared to long compression bandages, making it possible to remain applied even during the night<sup>4–5</sup>.

## Material and Methods

The purpose of this retrospective study was to establish detailed characterization of how effective a compression is in reducing the time of wound healing. During our work, we learned that using compression therapy shortens the length of the treatment noticeably. In literature this data is expressed in percentages, but our approach consists in showing it in days compared to the usual length of the treatment.

The measurements were taken, based on the history, presenting clinical symptoms, digital photography at each dressing foam change, and wound measurements were taken. Using history data prior to treatment, we found out how long the treatment before our approach lasted, and also how old is the wound itself. Using diagnostic tools we excluded arterial ulcers, diabetic feet and wounds caused by trauma. We also excluded wounds that can't be healed due to patients who don't want them to heal. We called these the social ulcers.

The analysis took place at our hospital. Our town is a small town that was struck by the war, as well as the rest of the province. Our hospital also covers border zones of three other equally poor provinces. Because of that, most of our patients are elderly people from impoverished rural areas who use the time at the hospital to socialize. This explains the fact that most of them don't even want their wounds to heal, because, without them, they would stay at their village doing nothing.

## Results

A total of 176 patients with leg ulcers were included in our three years study.

During a 3 years period (2011–2013) a total of 176 patients (61 male and 115 female, 34.66% and 65.34% respectively) with different types of leg ulcers were treated.

Out of 176 patients, 4 (2.27%) had arterial ulcers, 5 (2.84%) had decubitus, and 8 (4.54%) had wounds caused by trauma.

Diagnostically, we found 139 (78.98%) venous ulcers, which is the number of patients, not the number of wounds in total. If a patient had multiple ulcers, we would count them as one, and the time elapsed was measured until all ulcers had healed. We also excluded 75 (53.96%) patients that were not treated at our ward because we could not control the placement of compression and the way the wound was treated. 64 patients (46 %) with venous ulcers who met the exclusion criteria were treated at our ward, but we also excluded 7 (10.94%) patients that could not be healed, making it in total 57 patients that were successfully treated. Foldings took place every second/third day, depending on the magnitude of secretion from the wound.

Necrectomies and debridments were used when necessary. Patients were treated with bioocclusive bandages depending on the type of the wound and the magnitude of secretion from the wound. Before this innovation, all patients were treated without compression, which was the main standard in our method of treatment. Foldings were always performed by the same nurse, and debridments were done by a doctor. The compression system was put on every time and stayed on the wound until the next folding.

Healing time before our treatment lasted 22,510 days. With our treatment they healed in 6,210 days, shortening the time of therapy for 16,300 (72.41%). It is important to emphasize that all patients days compression of some sort (sock, bandage) after therapy and therefore ulcers did not come back. Some patients stopped using compression therapy and this resulted in ulcer reopening.

## Discussion and Conclusions

A hard-to-heal wound has been defined as one that fails to heal with standard therapy in an orderly and timely manner<sup>6</sup>. Reducing health costs is a recurring global issue. Wound management is a major area which contains a drive for improved cost-effectiveness<sup>7</sup>. The costs for hard-to-heal and long duration wounds get higher as the frequency of therapy, staff time and product use increases<sup>8–9</sup>.

The most important part is evaluation of the wound, done by diagnostic methods, among which Color-Doppler is the most important. It is used to evaluate a degree of venous insufficiency if it is present at all. If needed, biopsy should be performed to see the magnitude of the infection in the wound. If the skin is breached, the pathway for microbial invasion is opened. Because of possible delayed wound healing, critical colonization and infection of wounds present a big problem. Colonized and infected wounds are a potential source of cross-infection. The infected wound can have additional disadvantages for patients, including increased pain and discomfort, a delay in return to normal activities and a possibility of life threatening illness. In healthcare system, delayed wound healing is associated with additional costs and nursing time<sup>10</sup>.

The removal of the necrotic tissue is of great importance for several reasons. Firstly, necrosis covers the wound and interferes with adequate wound evaluation (quality of tissue, depth and edges of the wound cannot be checked properly). Secondly, necrotic tissue also provides a great habitat for bacteria and protects them from phagocytic activity. Lastly, it is a physical barrier for all types of treatment, and it also benefits biofilm formation by blocking access of antibiotics. Because of that, debridement plays a very important role in reduction of biofilm often found in chronic wounds and responsible for prolonging wound recovery<sup>11</sup>.

In the past few years, Negative Pressure Wound Therapy (NPWT) has become an accepted option and important factor in managing and treating patients with a wide variety of Wounds<sup>12</sup>. Chronic venous hypertension may be countered by high elevation of leg and multilayered compression bandaging, applied by trained staff within a setting of a specialist leg ulcer service. Excellent healing rates have been reported by approaching the problem this way<sup>13–14</sup>. Compression systems improve the healing of venous leg ulcers and should be used routinely in venous ulcers.

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## MOŽE LI KOMPRESIVNA TERAPIJA PROMIJENITI ŽIVOT?

### SAŽETAK

Ulkusi uzrokovani venskom stazom uobičajena su pojava kod pacijenata koji u anamnezi navode edem potkoljenica, varikozne vene te tromboze u površnom ili dubokom venskom sustavu nogu. Liječenje je dugotrajno i teško, a najvažnije je osigurati uvjete za epitelizaciju ulkusa. Kronične su rane rastući socijalni, ekonomski i zdravstveni problem. Cilj ove retrospektivne studije je prikazati efikasnost kompresivne terapije u smanjenju vremena potrebnog da bi rana zacijelila. U trogodišnju studiju je uključeno 176 pacijenata s ulkusima na potkoljenicama. Procjena je rađena na temelju anamneze, prisutnih kliničkih simptoma, digitalne fotografije tijekom svakog previjanja te mjerenja rane. U tri godine (2011–2013.) tretirano je ukupno 176 pacijenata (61 muškarac, 115 žena, 34,66% i 65,36%) s različitim tipovima ulkusa. Prosječna dob iznosila je 68,94 godina (muškarci 68, žene 70 godina). Na temelju starosti rane i trajanja prethodne terapije došli smo do zaključka da upotreba kompresivne terapije skraćuje vrijeme potrebno da rana zacijeli za dvije trećine vremena. Kompresivni sistemi poboljšavaju terapiju venskih ulkusa i trebali bi se koristiti u rutinskoj terapiji venskih ulkusa.